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– DRAFT FOR PUBLIC COMMENT –
**MODERNIZING CANADA’S POLICY FOR
RADIOACTIVE WASTE MANAGEMENT
AND DECOMMISSIONING**



Canada

BACKGROUND

MODERNIZING CANADA'S POLICY FOR RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING

Canada has been a world leader in the development and deployment of nuclear technology for decades. Fuelled by the world's richest deposits of uranium from Saskatchewan, nuclear energy has enabled Canada to have one of the most sustainable energy mixes worldwide. Nuclear energy is recognized internationally as playing an important role in meeting climate targets and achieving a net-zero emissions economy by 2050. As a non-emitting source of energy, it has also contributed to human health by helping to reduce air pollution. Canadian nuclear technology has supplied the world with radioisotopes for life-saving cancer treatments and medical diagnoses. It supports Canadian industries, such as the agriculture, aviation, mining and petroleum industries. Moreover, nuclear technology has made it possible for scientists in our universities and research establishments to engage in ground-breaking research.

Nuclear research and the development and use of nuclear technology, however, result in the production of radioactive waste. Radioactive waste consists of a gas, liquid, sludge or solid that has been declared as waste and contains a nuclear substance in excess of the clearance or exemption criteria and without foreseeable use. While radioactive waste is produced as part of the normal operation of nuclear facilities, including their decommissioning, it also may be produced as a result of nuclear or radiological emergencies.

Naturally Occurring Radioactive Material (NORM) is material found in the environment that contains radioactive elements of natural origin. It is often found in its natural state in sand or rocks, but is also associated with industrial processes and other situations not related to the use of nuclear technology. NORM is regulated by the provinces and territories and, therefore, does not fall within the scope of this policy.

In Canada, four classes of radioactive waste are recognized:

- High-level radioactive waste is mainly the used nuclear fuel from commercial power reactors used to generate electricity and from research reactors. It constitutes the smallest volume of radioactive waste, but presents the highest hazard level of waste due to the high level of radiation and significant heat that it releases, and the long period of time for which it remains a hazard. High-level radioactive waste requires shielding, remote handling and long-term isolation.
- Intermediate-level radioactive waste is also high-hazard waste requiring remote handling and isolation, but it does not produce the same level of heat as that associated with high-level radioactive waste. It includes filters or other materials that are part of the operating systems of nuclear reactors and may have been in close contact with nuclear fuel.
- Low-level radioactive waste contributes the largest volume of radioactive waste next to uranium mine and mill tailings. It releases low levels of radiation and may be handled with protective equipment. This class of waste can include contaminated building materials, clothing, tools or soils, and vegetation contaminated by past management practices. Within the low-level radioactive waste classification, there are two sub-groups: (i) *very low-level radioactive waste*, and (ii) *very short-lived low-level radioactive waste*. As their names imply, both classes involve

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wastes emitting levels of radiation that just meet or exceed the minimum levels requiring regulation. They are considered low-hazard wastes that do not require a high degree of containment or isolation. The *very short-lived, low-level radioactive waste* sub-group consists of wastes containing radionuclides that decay quickly.

- Uranium mine and mill tailings constitute the largest volume of radioactive waste in Canada and have resulted from the mining and processing of uranium to produce nuclear fuel.

Protecting the health, safety and security of people and the environment is the federal government's top priority when it comes to nuclear energy and radioactive waste. To this end, the federal government is committed to continuous improvement with respect to ensuring that safe solutions are in place for managing radioactive waste and decommissioning for generations to come. All radioactive waste in Canada is currently being safely managed in compliance with Canadian legislation and in accordance with international standards at facilities that are licensed by Canada's independent nuclear regulator—the Canadian Nuclear Safety Commission (CNSC).

Recognizing that radioactive waste can remain hazardous for very long periods of time, waste producers and owners must manage and dispose of radioactive waste in a manner that protects human health, safety, security and the environment over the long-term. Federal oversight and regulation ensure that this takes place, as the federal government is responsible for nuclear matters. In the area of radioactive waste management and decommissioning, like in other areas of the nuclear field, the federal government has developed and maintains a framework of policies for radioactive waste management and decommissioning.

The Government of Canada's vision for radioactive waste management and decommissioning is as follows:

- Radioactive waste is prevented or minimized, as far as practicable, as people in Canada continue to benefit from the use of nuclear technology in the energy, medical and industry sectors;
- All radioactive waste and decommissioning activities and all radioactive waste management facilities and sites are safely managed by waste producers and owners, and regulated by the nuclear regulator (CNSC) to protect human health, safety, security and the environment over the long term;
- Radioactive waste producers and owners, governments, Indigenous peoples, scientific experts, and other interested Canadians and communities regularly collaborate on and contribute, in an open and transparent manner, to the planning, development, review and implementation of an integrated strategy for radioactive waste management and decommissioning for Canada;
- By 2050, key elements of Canada's radioactive waste disposal infrastructure are in place, and planning is well under way for the remaining facilities necessary to accommodate all of Canada's current and future radioactive wastes;
- Canada's advances in technology and approaches to radioactive waste management and decommissioning, its consistent fulfillment of international commitments and obligations, and its contributions to international discourse and practices in these areas establish the country as a centre of expertise and leadership; and

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- Canada's commitment to implementing the *United Nations Declaration on the Rights of Indigenous Peoples Act* and the related Action Plan will be respected with regard to radioactive waste management and decommissioning.

To achieve its vision, the Government of Canada is modernizing its *Policy Framework for Radioactive Waste*. This draft *Policy for Radioactive Waste Management and Decommissioning* comprises a set of policy principles for radioactive waste management and decommissioning that will guide the federal government's direction.

These principles advance three key areas to be prioritized in terms of federal government commitments:

- (i) health, safety, security and protection of the environment;
- (ii) openness, transparency and inclusive engagement to encourage the timely development of the necessary infrastructure for effectively dealing with all of Canada's radioactive waste and decommissioning activities; and
- (iii) global excellence in the fields of radioactive waste management and decommissioning.

Canada's draft *Policy for Radioactive Waste Management and Decommissioning* would establish the overall principles to guide radioactive waste management and decommissioning. Legislation, particularly the *Nuclear Safety and Control Act*, the *Impact Assessment Act* and the *Nuclear Fuel Waste Act*, as well as other Acts, associated regulations and other policy tools would further support the implementation of the draft Policy. These policy tools are regularly reviewed and updated by the federal government, as required, to ensure that they remain relevant and effective. Likewise, the federal government would review its *Policy for Radioactive Waste Management and Decommissioning* as appropriate, to ensure that it aligns with International Atomic Energy Agency guidance.

**MODERNIZING CANADA'S POLICY FOR
RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING**

The Government of Canada recognizes the many national benefits of nuclear technology, including zero-emissions electricity, medical, industrial and research applications. Protecting the health, safety and security of Canadians and the environment is the government's top priority when it comes to nuclear technology and the resulting radioactive waste. Canada's *Policy on Radioactive Waste Management and Decommissioning*, which is set out below, comprises a series of policy commitments and principles for radioactive waste management and decommissioning to support this priority. It also prioritizes the Government's commitment to openness, transparency and inclusive engagement to advance the timely development of infrastructure for effectively dealing with all of Canada's radioactive waste over the long term, as well as the country's commitment to achieving global excellence in radioactive waste management and decommissioning.

- 1. Health, safety, security and environmental protection are the federal government's top priorities with respect to radioactive waste management and decommissioning. The government is committed to ensuring that responsibilities are clearly delineated, and that the necessary policy and legislative framework are in place to establish requirements, guidance, licensing and compliance in these priority areas. This applies to waste arising both from normal operations and decommissioning, and from nuclear or radiological emergencies.*

The federal government:

- 1.1. ensures that radioactive waste management and decommissioning activities, including transportation, are carried out in a comprehensive and integrated manner that prioritizes the health, safety and security of people and the environment;
- 1.2. has established a legislative and regulatory regime, centered on an independent nuclear regulator, to oversee and regulate radioactive waste management and decommissioning, including funding and operational responsibilities in accordance with approved waste disposal and decommissioning plans;
- 1.3. recognizes the importance of ensuring that all radioactive wastes are controlled and managed properly, and may accept responsibility for the management of historic radioactive waste liabilities for which the producer no longer exists and the current owner cannot reasonably be held responsible;
- 1.4. recognizes the long time scales associated with the management of radioactive waste and the associated obligations to ensure ongoing stewardship of radioactive waste disposal facilities and sites once closed, so that they remain safe and secure for people and the environment in perpetuity. The federal government ensures that responsibility for maintaining institutional controls over the very long term is assigned to an

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appropriate entity, and that there is continuity of responsibility over successive entities if necessary, and, where no appropriate entity is available, it works with other levels of government to develop arrangements to ensure that such controls are maintained;

- 1.5. ensures that the deployment of reprocessing technology in Canada, which allows for the extraction of fissile material from used nuclear fuel, is subject to policy approval by the Government of Canada to ensure that due consideration is given to all relevant factors, including ensuring the health, safety and security of people in Canada, as well as compliance with international safeguards and non-proliferation treaties, and respect for environmental considerations.

Waste producers and owners will:

- 1.6. ensure optimal protection of human health, safety, security and the environment for present and future generations in their radioactive waste management and decommissioning activities, including transportation;
- 1.7. fund, plan, develop and operate their radioactive waste management facilities and disposal sites, as well as the decommissioning, clean-up and closure of these facilities and sites;
- 1.8. prevent and minimize, as far as practicable, the production of radioactive waste in their operations, and in the decommissioning and, as applicable, closure of their facilities and sites;
- 1.9. characterize, classify and document their radioactive waste in order to define and implement waste management and decommissioning solutions that are commensurate with their risks in both the short and long term;
- 1.10. decommission facilities and sites within an appropriate timeframe to avoid transferring the responsibility to future generations, recognizing that alternative approaches may be justified, subject to approval by the regulator.

2. The federal government is committed to openness, transparency and inclusive engagement with Indigenous peoples, provinces, territories, interested communities, scientific experts, waste producers and owners, and other interested persons in Canada to encourage the timely development of the necessary infrastructure to effectively manage all of Canada's radioactive waste and decommissioning activities.

The federal government:

- 2.1. acknowledges, respects and honours that First Nations, Inuit and Métis peoples have unique status and rights in Canada, as recognized and affirmed in the *Constitution Act, 1982*, and that the honour of the Crown guides the conduct of the Crown in all of its

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dealings, including consultation and engagement processes, and that the conduct of the Crown will be guided by any framework, measure or action plan developed by Canada for Indigenous reconciliation, consultation or engagement purposes and that is relevant to radioactive waste management and decommissioning, including any framework, measure or action plan developed as a result of the *United Nations Declaration on the Rights of Indigenous Peoples Act*;

- 2.2. requires and oversees the development, by waste producers and owners, of an integrated strategy for radioactive waste management and decommissioning, recognizing the importance of having waste producers and owners document and report on their radioactive waste inventories, as well as having them advance comprehensive and integrated radioactive waste management and decommissioning solutions in a timely manner to avoid shifting responsibility for these activities to future generations;
- 2.3. recognizes and fulfills its obligations, as a waste producer and owner, for radioactive waste management and decommissioning activities associated with historic wastes for which no entity is responsible, and legacy wastes that were generated by federal entities in the formative years of Canadian nuclear research and development.

Waste producers and owners will:

- 2.4. plan radioactive waste management and decommissioning projects in an open and transparent manner, with early input from Indigenous peoples, provinces, territories, interested communities, scientific experts and other interested persons in Canada;
- 2.5. work in partnership with First Nations, Inuit and Métis communities to gain a greater understanding of their Indigenous Knowledge, approaches and advice in implementing the siting, construction, operation and monitoring of radioactive waste management and decommissioning projects;
- 2.6. engage with Indigenous peoples, provinces, territories, interested communities, scientific experts and other interested persons in Canada to develop and maintain an integrated strategy for radioactive waste management and decommissioning activities that defines, reports on and sets out approaches for the long-term management, including disposal, of all of Canada's current and future radioactive wastes;
- 2.7. collaborate with one another to plan and develop waste management and decommissioning solutions that benefit from opportunities for integrated radioactive waste management and decommissioning approaches and infrastructure;

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- 2.8. demonstrate a commitment to ongoing scientific, technical and safety learning, as well as collaboration, innovation and sharing of operational experience and research in radioactive waste management and decommissioning.

3. *The federal government is committed to global excellence in the fields of radioactive waste management and decommissioning through international collaboration on effective technology, approaches and policies, by honouring its international commitments and respecting international guidance, and by providing international expertise as appropriate.*

The federal government:

- 3.1. is committed to providing international leadership and to collaborating on practices, research, science and guidance related to radioactive waste management and decommissioning, as well as to sharing its experiences with and learning from the global community, and to benchmarking against international approaches.
- 3.2. honours its international obligations in the area of radioactive waste management and decommissioning;
- 3.3. is committed to respecting international guidance in the area of radioactive waste management and decommissioning, recognizing that Canada's domestic context may result in the implementation of alternative approaches that are protective of human health, safety, security and the environment, and that are approved by Canada's nuclear regulator (the CNSC);
- 3.4. is committed to the principles whereby Canadian-generated radioactive waste must be disposed of in Canada, and radioactive waste generated in other countries are not to be disposed of in Canada, recognizing that exceptions may be made to allow for the repatriation of disused radioactive sources to Canada.